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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,736	06/19/2001	Wilbur G. Catabay	00-654	5658

24319 7590 12/24/2002

LSI Logic Corporation
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Milpitas, CA 95035

EXAMINER

KILDAY, LISA A

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,736

Applicant(s)

CATABAY ET AL.

Examiner

Lisa A Kilday

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) 2-7, 11 and 13-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

Applicant's election with traverse of species I in Paper No. 8 is acknowledged. The traversal is on the ground(s) that there is no patentable distinction between the claims of the two groups. This is not found persuasive because the embodiment found in figs. 7-11 containing via openings and trenches that require etching steps while the elected embodiment of figs. 1-6 do not require etching.

Applicant admits on pg. 12 of his response that claims 2, 6, 12 (previously canceled), and 13 are drawn to a dual damascene structure (species II). Therefore claims 2, 6, 13, and their dependent claims are drawn to non-elected species II because they contain a double damascene structure. Claims 2-7, 11, 13-16 are drawn to a nonelected species, along with claims 17-21 that were not elected in paper #8. Claims 2-7, 11, 13, 14-21 are nonelected and withdrawn from consideration in this office action.

The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 2-7, 11, 13, 14-21 drawn to an invention nonelected with traverse in Paper No. 8. The nonelected claims will be rejoined and allowed upon indication of allowable subject matter if they include all of the limitations of the allowable subject matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (6,028,015). In re claim 1, Wang et al. discloses a process for forming an integrated circuit structure having at least one layer of low k material therein and a layer, formed from a low k dielectric layer, suitable for use as an etch stop and/or an etch mask which comprises: forming a first layer of low k dielectric material (10) over a previously formed integrated circuit structure (2); and treating the upper surface of said first layer of low k dielectric material with a plasma to form a first layer of densified dielectric material (14, 18) over the remainder of the underlying first layer of low k dielectric material (fig. 4, col. 2 lines 43-56, col. 3 lines 43-49); whereby said first layer of densified dielectric material (18) is capable of serving as a etch stop and/or an etch mask (fig. 3 ref. 18) for etching of said underlying first layer of low k dielectric material. However, Wang et al. does not teach forming a first low k material and treating the upper surface of said first low k prior to any exposure of said first low k to etchant. However, selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Therefore it would be obvious to one skilled in the art at the time of invention to modify the process of Wang et al. by densifying the first low k prior to etching because densification reduces moisture.

Response to Arguments

Applicant's arguments filed 11/6/02 have been fully considered but they are not persuasive. Applicant under the Discussion section asserts that the Wang et al. patent is directed to a process for treating already damaged low k insulation material.

Applicant's point is moot because this limitation is not in claim 1. Applicant asserts that

the treatment of Wang et al. by providing energized hydrogen atoms to react with reactive bonds on the damaged silicon atoms *after* the steps of forming a resist mask on the layer of low k insulation material, *after* etching openings in the low k material through the mask and then *after* removing the mask is different than the applicant's process. Applicant's argument is not persuasive for two reasons. The first reason is that these limitations are not claimed. The second reason is that Applicant uses "comprising" language in claim 1. Therefore, applicant's method does not preclude the treatment step before, during, or after exposing the first layer of low k dielectric material to etchant. Applicant's representative's assertion that the method of Wang et al. will form a different material on the surface of the low k material is merely a conclusory observation and applicant gives no reason, explanation, or evidence as to how this material differs. See MPEP 2145.

Arguments directed to claims 4, 6-7, 13-16 are moot because they are drawn to non-elected claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

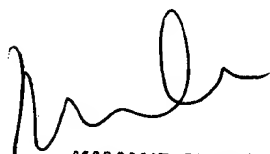
Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo, can be reached on (703) 308-1233. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

12/18/02



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